Glaucoma Seminar

Glaucoma Week 9-15 March 2014
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What is Glaucoma?

- Glaucoma is a group of eye diseases in which progressive damage to the optic nerve leads to impaired vision and, in a small proportion of people, blindness.

- It is characterised by:
  - Visual field loss (peripheral vision)
  - Raised eye pressure
  - Changes of optic nerve appearance “cupping”
How glaucoma affects the eye?

• It causes gradual progressive irreversible loss of sight usually starting at peripheral vision and spreading slowly to the centre.

• In most patients there is no pain and vision seems normal while the sight is being damaged “Silent thief of sight”
How it happens?
Aqueous humour
Types of glaucoma

- Open angle
- Closed angle
  - Acute
  - Chronic
- Primary
- Secondary
- Congenital
Glaucoma types

• Primary open angle glaucoma is the most common in UK:
  – If untreated slowly progressive / without warning symptoms “silent blinding disease”

• Angle closure glaucoma common in Asia:
  – Acute: rapid loss of vision and pain due to very high IOP
  – Chronic

• Secondary
  – Due to trauma, inflammation or surgery etc

• Congenital
Who is at risk to open angle?

- Can affect any age.
- Raised eye pressure - “intraocular pressure (IOP)”
- Age - increase risk with age
- Race - more common in Afro-Caribbean
- Family history:
  - Risk estimated to 4% to offspring and 10% to sibling
- Thin cornea
Closed angle glaucoma

- Female gender
- Increasing age
- Inuit or East Asian ethnicity
- Shallow anterior chamber
- Shorter axial length
- Hypermetropia - “long sightedness”
- Genetic factors
How is glaucoma detected?

- High IOP
- Or abnormal visual field test
- Or suspicious optic nerve appearance
Patient who may have glaucoma

• **Glaucoma suspect:**
  – Suspicious optic nerve appearance
  – Suspicious visual field test

• **Ocular hypertension:**
  – High eye pressure
  – Normal visual field
  – Normal optic nerve
How is glaucoma treated?

- Glaucoma is not curable
- Vision lost cannot be regained
- Diagnosis is the first step to preserving eye sight
- Treatment is aimed at reducing eye pressure, which is proved to reduce visual loss
- Eye drops, laser or surgery may halt or reduce rate of visual loss
Follow up

• Monitored for life.
• Approximately 10% of people with glaucoma who receive proper treatment still experience loss of vision
• Glaucoma can cause blindness if it is left untreated
Treatment aims

• Treatment according to estimated risk of loss of vision
• Target pressure is set
• Regular monitoring
• Patient’s education
  – Reason for treatment
  – How to use drops
  – Potential side effects of drops
  – When to consider surgery
  – Benefits and risks of surgery
Whom to treat?
Target pressure
Eye Drops

- **Prostaglandins**
  - Once at night
- **Beta blockers**
  - Twice a day
- **Carbonic anhydrase inhibitors**
  - Twice a day
- **Sympatomimetics**
  - Twice a day
- **Miotics**
  - 4 times a day
Laser therapy

- **Yag laser Iridotomy**
  - A small hole is created in the Iris in patients with narrow angles to prevent angle closure glaucoma

- **Selective laser trabeculoplasty**
  - Laser applied on trabecular meshwork improving aqueous drainage and reducing IOP

- **Diode cyclophotocoagulation laser**
  - Part of the ciliary body that produces aqueous humor is destroyed to reduce IOP
Surgery

- **Trabeculectomy**
  - Creates a hole in the wall of the eye ball to allow aqueous to escape under a trap door and collect under the conjunctiva forming a bleb allow fluid to disperse in circulation

- **Glaucoma drainage implant**
  - Tube inserted in the eye to drain aqueous
Glaucoma and Driving

Standard 1:
• able to read a standard car number plate at 20.5 meters with or without glasses

Standard 2:
• driver should have a binocular (monocular if appropriate) horizontal field of vision of 120 degrees minimum
• no significant field defect in the binocular field within 20 degrees of fixation either above or below the horizontal meridian
Visual Field

ESTEMAN BINOCULAR FUNCTIONAL TEST

STIMULUS: III, WHITE, BECKON 31.5 RADS NAME
BLIND SPOT CHECK SIZE OPF
FIXATION TARGET CENTRAL
STRATEGY: SINGLE INTENSITY
STIMULUS INTENSITY: 10 DB
RX USED: +7.0 DS DOK DEG

BINOCULAR

F Nexah: 30 DB
TEST TIME: 09:43:11

10° 20° 30°

• = POINTS SEEN: 120/120
■ = POINTS MISSED: 0/120

ESTEMAN EFFICIENCY SCORE: 100

Quality  Safety  People  Delivery  Environment  Cost
When to inform DVLA?

- Ocular hypertension does not need to be reported, as ocular hypertension suggests that the visual fields are normal.
- If glaucoma is diagnosed in one eye and the other eye has normal vision, it is not necessary to inform the DVLA.
- Anyone suffering from glaucoma (with visual field defects) in both eyes should inform the DVLA.
How common is Glaucoma?

- Glaucoma is the leading cause of irreversible blindness in the world.

- Approximately 1-2% of the population over 40 years old are affected but about half of them are unaware of this.

- The prevalence increases with age, affecting about 10% of people aged over 70

- In the UK, glaucoma accounts for about 10% for visual impairment registration
Prevalence of glaucoma

- About 30% of patients seen in hospital eye clinics have glaucoma or are glaucoma suspects.

- The burden of glaucoma is likely to increase in the future because of longer life expectancy and an ageing population.

- It is estimated that more than 500,000 people suffer from glaucoma in England and Wales alone.

- Ocular hypertension affects 3-5% of the population aged over 40 and only a small proportion of these people develop glaucoma.
National statistics

- Approx 24.4m of the population of England are aged over 40
- Approx 158,382 are diagnosed with Chronic Ocular Acute Glaucoma (COAG)
- 7% Unstable (approx 11,087)
- 26% of COAG can be seen in community
- 90% of Ocular Hypertension (OHT) can be seen by optometrists
Estimated Local Statistics

- Approx 150,000 of the local population are aged over 40
- 990 patients diagnosed with glaucoma
- 7% unstable (73)
- 26% of COAG can be seen in community
- 90% of OHT can be seen by optometrists
NICE Guidelines for the:
Diagnosis and management of chronic open angle glaucoma and ocular hypertension

- Guidelines on diagnosis and management of COAG, because of management uncertainty and variation in clinical practice
- The guideline is evidence based recommendation for management of glaucoma, ocular hypertension and glaucoma suspects (2009)
- Recommendation for diagnosis, monitoring, treatment, organisation of care and patients information.
How to manage glaucoma locally?

• Shared care scheme where optometrist monitor in community patients who have OHT or glaucoma suspects

• Virtual glaucoma clinics are “in development” where some glaucoma patients are seen by optometrists and consultants review the results
Recent and Future Developments

Diagnosis

• Self measurement of IOP “Icare”

• Continuous monitoring of IOP “Sensimed AG” disposable soft silicone contact lens containing a sensor, a flexible disposable self-adhesive antenna placed around the eye and a pocket-sized recorder
Treatment

• Preservative free drops

• Long active sustained release drugs ie biodegradable implant under conjunctiva releasing latanoprost.

• Neuroprotection

• Rho Kinase inhibitor is a new class of antiglaucoma drugs in development
Minimally invasive glaucoma surgery

- **Trabectome**
  - Removes the inner wall of the trabecular meshwork to improve aqueous drainage

- **Trabecular stent bypass**
  - Small tube inserted through the trabecular meshwork with one end in anterior chamber and other end into the canal of Schlemm
Minimally invasive glaucoma surgery

- Cypass Micro-stent® polyamide tubular stent designed to shunt aqueous humour from the anterior chamber to the suprachoroidal space

- Xen® glaucoma implant soft natural collagen-derived gelatin implant, which is implanted at the same time as cataract surgery or as a standalone procedure in patients with mild glaucoma
Thank you. Any Questions?
The next seminar on Parkinson’s Disease will take place on:

- Wednesday 9\textsuperscript{th} April 2014
- 11 am to 12 pm

in

Cardiac Lecture Theatre
Cardiac Education Centre
BVH